I. The Claims Define Allowable Subject Matter

The Office Action provisionally rejects claims 1 and 2 under 35 U.S.C. §101 as claiming the same invention as that of claims 1 and 3 of copending Application No. 09/866,781. Claim 1 is amended to obviate the rejection.

Specifically, claim 1 recites providing an input signal to the device so that the output signal has a predetermined phase relationship (in-phase or anti-phase) to the input signal decided by a predetermined direction of polarization of the ferroelectric layer. Furthermore, the input signal is also arranged not to cause a change in the predetermined direction of polarization. Accordingly, withdrawal of the provisional double patenting rejection based on copending Application No. 09/866,781 is respectfully requested.

Additionally, the Office Action rejects claims 1-10 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,215,227 to Boyd ("Boyd") in view of U.S. Patent No. 3,683,211 to Perlman et al. ("Perlman"). The rejection is respectfully traversed.

With regard to claim 1, the applied art does not disclose a device including, "means for providing an input signal to one layer for causing an induced output signal from the other layer without causing a change in the predetermined direction of polarization, the induced output signal from the other layer having a phase determined by the predetermined direction of polarization," as recited in independent claim 1.

Instead, Boyd discloses a piezoelectric transformer with end masses attached to opposing end faces. In column 12, line 48 Boyd states that the ceramic layers can be ferroelectric elements. The end masses provide a transformer which operates at a lower frequency with higher gain. The claimed invention is distinguished from Boyd because the end masses are selected to provide the transformer with more uniform resonant characteristics. For example, in column 8, the end masses are preferably steel, but may also be aluminum. These are both relatively soft materials in comparison to the ceramic

piezoelectric layers. However, it appears to be the Examiner's position that end masses serve to clamp the ceramic layers to a degree because the length is selected to ensure that the compressive and tensile forces generated are concentrated at the bond line of the layers.

It is evident from column 12, lines 57 to 64 that the phase of the applied signal relative to the direction of polarization of the layers is not important in the structure described by Boyd. Hence, it is submitted that there is no teaching or suggestion in Boyd of arranging the input signal to be in-phase or anti-phase to the polarization direction of the ferroelectric layer.

Perlman discloses a ferroelectric transformer surface mounted to a rigid substrate, or encapsulated in a substance. Both embodiments described are seeking to enhance resonant response by suppressing resonant nodes of mechanical vibrations. The Office Action asserts that the encapsulated device shown in figure 2 has an effect of clamping the ferroelectric layers.

In the embodiment of figure 3, the rigid substrate restricts the vibrations of the structure to radial vibrations which yield the same polarity output signal. However, there is no teaching or suggestion in Perlman of arranging the input signal relative to the polarization direction of the ferroelectric layers.

For the same reasons as discussed above with respect to claim 1, Applicant respectfully asserts that new claims 11-15 are allowable.

Accordingly, Applicant respectfully asserts that the rejection under 35 U.S.C. §103 should be withdrawn because the applied art, whether taken singly or combined, do not teach or suggest each feature of independent claims 1, 13 and 15.

MPEP §2143.03 instructs that "[t]o establish *prima facie* obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art. *In re Royka*, 409 F.2d 981, 180 USPQ 580 (CCPA 1974)."

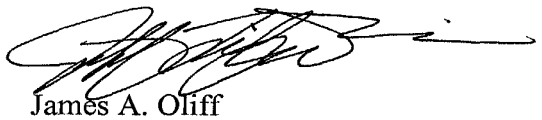
For at least these reasons, it is respectfully submitted that independent claims 1, 13 and 15 are distinguishable over the applied art. The remainder of the claims that depend from independent claims 1 and 13 are likewise distinguishable over the applied art for at least the reasons discussed above, as well for the additional features they recite.

II. Conclusion

For at least these reasons, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-15 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,



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Attachment:
Appendix

Date: April 30, 2003

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DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

APPENDIX

Changes to Claims:

The following is a marked-up version of the amended claim(s):

1. (Amended) A device, comprising:

a piezoelectric material layer ~~of piezoelectric material~~ and a ferroelectric material layer ~~of ferroelectric material~~ clamped together, the ferroelectric material layer having a predetermined direction of polarization; and

means for providing an input signal to one layer for causing an induced output signal from the other layer without causing a change in the predetermined direction of polarization, the induced output signal from the other layer having a phase determined by the predetermined direction of polarization~~such that a voltage applied to one layer results in a voltage being generated across the other layer~~.